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Director: Fernando Emilio Valladares Fuente

Email: fernando.valladares@upr.edu.cu





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Original article

Small games with notions of chess for the development of basic motor skills in Physical Education

Juegos pequeños con nociones de ajedrez para el desarrollo de las habilidades motrices básicas en la Educación Física

Pequenos jogos com noções de xadrez para o desenvolvimento de habilidades motoras básicas em Educação Física

Iván Mestre Más^{1*} , Victoria Isabel Martínez Castillo¹ , Annette Núñez González² , Eglys Vargas Geliga² 

¹Higher Institute of Educational Sciences, "ISCED-HUÍLA", Angola.

²"Manuel Fajardo" University of Physical Culture and Sports Sciences. Havana Cuba.

*Corresponding author: victoriabel1962@gmail.com

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ABSTRACT

The game is a natural way of learning, since it includes elements of learning in interaction with play. Specifically, the game of chess is applied in the educational system of some countries as a multidisciplinary instrument, since it helps in the development of cognitive thinking, planning, imagination, anticipation, self-control, decision-making, creativity and intelligence. In this sense, the Physical Education teachers of the 2nd grade of the 1728 Elementary School, in the Tchioco neighborhood, in Lubango presented difficulties in the application of methods that allow the development of basic motor skills in an attractive way for their students. Hence, the objective of this research was to propose small games with notions of chess for the improvement of basic motor skills in the aforementioned students.



For this, a descriptive, non-experimental, cross-sectional study was carried out and scientific methods were used at the theoretical level such as analytical-synthetic, induction-deduction, historical-logical and functional-systemic-structural and at the empirical level such as the review of documents, observation and interview; as well as the percentage calculation for the analysis of the data obtained. The results obtained allowed to characterize the state of development of the proposed objective and to adapt the proposal of games elaborated.

Keywords: Chess, Physical Education, basic motor skills, game.

RESUMEN

El juego es una forma natural de aprender, ya que incluye elementos de aprendizaje en interacción con lo lúdico. Específicamente el juego de ajedrez, se aplica en el sistema educativo de algunos países como un instrumento multidisciplinario, pues ayuda en el desarrollo del pensamiento cognitivo, la planificación, la imaginación, la anticipación, el autocontrol, la toma de decisiones, la creatividad y la inteligencia. En ese sentido, los profesores de Educación Física del 2^{do} grado de la Escuela Primaria 1728, en el barrio Tchioco, en Lubango presentaron dificultades en la aplicación de métodos que permitan el desarrollo de las habilidades motrices básicas de manera atractiva a sus alumnos. De ahí que el objetivo de esta investigación consistió en proponer juegos pequeños con nociones de ajedrez para el mejoramiento de las habilidades motrices básicas, en los alumnos antes mencionados. Para ello, se efectuó un estudio descriptivo, no experimental, de corte transversal y se emplearon métodos científicos del nivel teórico como el analítico-sintético, inducción-deducción, histórico-lógico y funcional-sistémico-estructural y del nivel empírico como la revisión de documentos, la observación y la entrevista; así como el cálculo porcentual para el análisis de los datos arrojados. Los resultados obtenidos permitieron caracterizar el estado de desarrollo del objetivo propuesto y adecuar la propuesta de juegos elaborada.

Palabras clave: Ajedrez, Educación Física, habilidades motrices básicas, juego.

SÍNTESE

O jogo é uma forma natural de aprendizagem, pois inclui elementos de aprendizagem em interação com o jogo. Especificamente, o jogo de xadrez é aplicado no sistema educacional de alguns países como um instrumento multidisciplinar, pois ajuda no desenvolvimento do pensamento cognitivo, planejamento, imaginação, antecipação, autocontrole, tomada de decisões, criatividade e inteligência. Neste sentido, os professores de Educação Física da 2^a série do Ensino Fundamental 1728, no bairro de Tchioco, em Lubango, apresentaram dificuldades na aplicação de métodos que permitem o desenvolvimento de habilidades motoras básicas de forma atrativa para seus alunos. Assim, o objetivo desta pesquisa consistiu em propor pequenas partidas com noções de xadrez para a melhoria das habilidades motoras básicas dos alunos acima mencionados. Para este fim, foi realizado um estudo descritivo, não-experimental, transversal e descritivo e foram utilizados métodos científicos a nível teórico, tais como analítico-sintético, indução-dedução, histórico-lógico e



funcional-sistémico-estructural, e a nível empírico, tais como revisão de documentos, observação e entrevista, bem como cálculo percentual para a análise dos dados obtidos. Os resultados obtidos tornaram possível caracterizar o estado de desenvolvimento do objetivo proposto e adaptar a proposta de jogo elaborada.

Palavras-chave: Xadrez, Educação Física, habilidades motoras básicas, jogo.

INTRODUCTION

Physical Education is a curricular discipline that is pedagogically oriented to contribute to the integral development of man. In primary education, it plays a transcendental role aimed at the development of different physical qualities, as well as improving the different motor skills of students, for which reason various researchers such as (Cabrera Suárez, 2003; Castañer and Camerino, 2006; Ortín *et al.*, 2008 and Pol-Rondón *et al.* 2021) have characterized basic motor skills (HMB).

For Castañer and Camerino (2006), the HMBs arise from the combination of movement patterns that they introduce to work, both global and segmentary of the body. Meanwhile, for Ortín *et al.* (2008) are a series of motor actions that appear phylogenetically in human evolution, such as walking, running, turning, jumping, throwing, directing, among others. For their part, Pol-Rondón *et al.* (2021) define them as skills developed by all individuals that have allowed their survival. However, for Cabrera Suárez (2003) they constitute the set of fundamental movements that arise from the motor schemes and are the support of the rest of the motor actions that the individual develops throughout his life, an idea that is assumed in the present research.

The improvement of the HMB has its beginnings within the family and takes center stage in the school, where scientifically and pedagogically they are promoted; for this, from an early age, a set of physical movements are carried out that are gradually perfected.

The Physical Education class is one of the main spaces where the HMB must be developed, which appear progressively in the child during the different stages of the development process and adapt to the demands of life. Specifically in the Angolan educational system, 2nd grade Physical Education classes are taught during three quarters of the academic year and among their objectives is to develop HMB such as walking, running, jumping and throwing (INIDE/MED, 2019).

But, according to what has been mentioned and the characteristics of single-teacher teachers in Angola, da Silva Tavares *et al.* (2020) state that these teachers receive preparation on the general elements of Primary Education, with a great limitation in the contents of the Physical Education subject; later, they add that teachers receive insufficient hours of classes and knowledge, so it is necessary to project professional improvement that deepens theoretical, methodological and practical elements and constitute limitations in the teaching-learning process.



In accordance with these characteristics of the teachers, small games with notions of chess are planned, since they contain a sensitive organization, with few rules that can be modified taking into account their duration or participation. Therefore, it is the small games that are used so that, in a playful and scientific way, the assimilation and development of the HMB is facilitated in the students, during the Physical Education classes.

The game is a natural form of learning that contributes to the harmonious development of the child and is an ideal means for the acquisition of bodily skills. Therefore, chess has been used as a multidisciplinary instrument that, applied in the educational system, helps in the development of cognitive thinking, judgment, planning, imagination, anticipation, patience, self-control, decision making, courage, creativity and intelligence (Díaz, 2020; Mendes *et al.*, 2018; Mestre *et al.*, 2018 and Olivera and Rosales, 2020).

During the game of chess, each move is associated with an act of reflection that precedes the choice of move. This process of reflection requires attention (voluntary application of thought to the activity that is taking place) and concentration (the ability to voluntarily isolate oneself from the outside world and focus exclusively on the action that is taking place). Specifically, the practice of this sport enhances the skills that favor better academic performance and facilitates the understanding and assimilation of other contents, such as those of Physical Education classes (Crespo and Armenteros, 2007; Díaz González *et al.*, 2009; Diaz, 2020; Mendes *et al.*, 2018; Mestre and Tur, 2016; Olivera Rodríguez *et al.*, 2018 and Rosas and Aparecido, 2008).

In accordance with the above, the authors of this study set the objective of proposing small games with notions of chess for the improvement of HMB in Physical Education classes of the 2nd grade of Elementary School 1728 in the Tchioco neighborhood, in Lubango.

MATERIALS AND METHODS

It was a descriptive, non-experimental, cross-sectional study, in order to achieve the objective formulated in the research. The population was made up of the 2nd grade groups of Elementary School 1728 (six in total) of the Tchioco district, in Lubango, where a random group was selected as a sample. In addition, as a source of information, the six teachers who teach classes in the 2nd grade in this same school were included, five of them (83.3 %) are medium technicians and only one (16.7 %) is a graduate.

Within the theoretical methods, the analytical-synthetic, induction-deduction, historical-logical and functional-systemic-structural methods were used, which allowed an assessment of the historical behavior of the object of study as a fundamental category of the research.

Regarding the empirical level methods, the review of documents, observation and survey were used. With the review of documents, the program (INIDE/MED, 2019) and the Physical Education Practical Guide for the 2nd grade Teacher (INIDE /MED, 2015) were analyzed to extract the general objectives, the distribution of topics, its general and specific objectives. Regarding the observation, it was carried out in order to know the reality of the



Physical Education classes, the difficulties of the teachers and the motivation of the students with respect to the HMB; In it, three parameters were defined: the teacher's presentation, the teacher's attitude towards the students and the small games in Physical Education classes and each of the parameters had different indicators.

The teacher survey included the characterization of different aspects and the weekly frequency of Physical Education classrooms. Likewise, topics related to the improvement of the HMB, its importance and the means used were included. While the survey of the students was carried out with the objective of determining the opinions about the Physical Education classes, the number of games related to the improvement of the HMB and if you would like to link the classes with a board game.

Regarding the mathematical methods, descriptive statistics were used, specifically the percentage calculation. Once the different instruments were applied and analyzed, a proposal for small games with notions of chess was elaborated. In the procedures followed, the ethical standards of the Ethics Committee were followed, where all the participants gave their consent, according to the principles of the Helsinki 2008 *World Medical Association declaration*.

RESULTS AND DISCUSSION

In the review of the Physical Education program, four sequentially numbered themes were found: Basic Gymnastics, Rhythmic Gymnastics, Athletics and Games, with the aim of being worked on in different quarters. Regarding the Practical Guide of Physical Education for the Teacher of 2nd grade, it constituted an instrument of orientation in the development of the classes; 37 activities were found in it with the aim of developing volitional qualities and increasing physical capacities, through movement. In this document, cardiopulmonary activation games (at the time of warm-up) and games for the final part are proposed; Games only appeared in the main part of the third quarter (item 4: Games), a situation that justified the present proposal and which was put into practice in different contents and throughout the school year.

From the observation, he highlighted that in the 1728 Elementary School there are no teachers of the Physical Education specialty, since the applied system is mono-teaching. Ten classrooms of the 2nd grade selected as a sample were observed, the process was directed by a teacher with 12 years of experience in primary education. This teacher had difficulties in teaching Physical Education, despite her experience as a teacher.

As previously mentioned, three parameters were defined regarding the teacher's presentation and the teacher's punctuality to class, as well as the correct uniformity at the beginning of the activity, were established as indicators. The first indicator was met in 100 % of the observed classes, which demonstrated the respect and importance given to compliance with the teaching-learning process and promoting this habit in students.



In the second indicator, it was observed that 100% did not use sportswear according to the activity. Physical Education is considered healthy when it is done properly and with the necessary precautions; in this case, the clothing that was used at the time of physical activity played an important role, since it could cause, due to excessive heat, from the appearance of sweat to more serious injuries.

The second parameter of the observation that was measured was the attitude of the teacher towards the students, this showed that in 100% of the classes the teacher identified, listened, talked and was affectionate with the students. These aspects were important since the expressions of affection and warmth motivated the students to a great extent and therefore, better results could be obtained in the teaching-learning process.

Regarding the third parameter, referring to small games in Physical Education classes, several indicators were taken into consideration: adequate orientation of the objectives, relationship of the objectives with the contents, use of small games, explanation and correct demonstration of the small games, application of the methodological steps for teaching small games and the part of the class where small games were used.

Among the main results, the lack of mastery of the Physical Education didactics was verified, as well as little planning of the classes, deficient determination of the objectives and little relationship between them and the content of the class. In addition, the teacher only used small games in two of the ten observed classes, without the correct application of the methodological steps (Figure 1).

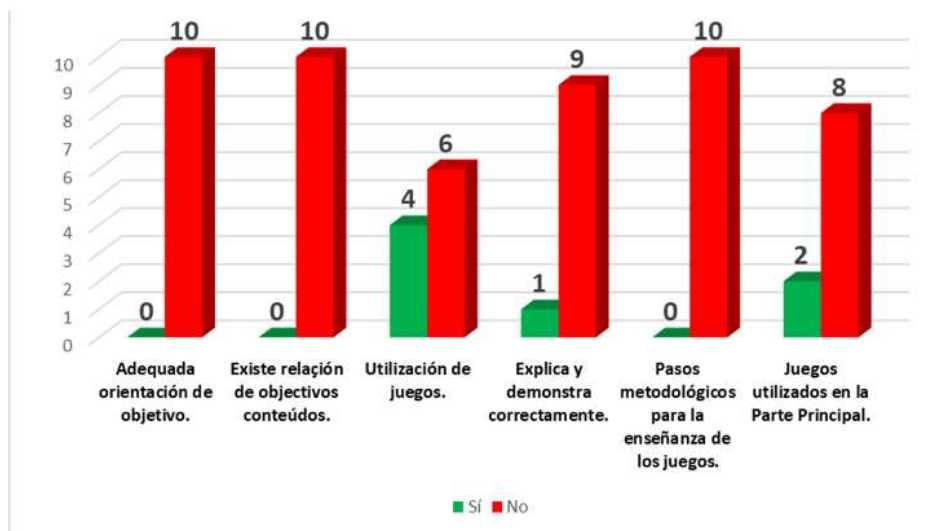


Fig. 1. - Small games in Physical Education classes

The information that was extracted from the survey to the teachers, made us reflect on the frequency with which Physical Education is worked on in this school; where 66.6 % of those surveyed stated that they only work once a week, for different reasons, among which they mentioned the large number of students per class, short shifts, lack of mastery of the contents, weather conditions or that the center's schedule does not favor the realization of



these classes. This showed that the guidelines of the Angolan Ministry of Education (MED), which establishes a frequency of twice a week, have not been complied with.

Regarding the improvement of the HMB, 83.3 % recognized the importance that these have in Physical Education classes in the development of the different physical qualities of the student, which allowed the child to adapt to the dissimilar demands of life. Subsequently, when analyzing the HMB that the surveyed teachers work the most, only two answered correctly when mentioning running and jumping. Regarding the latter, the Physical Education program for this grade recommends that running, jumping and throwing skills be fundamentally worked on. None of the teachers managed to mention a suitable means to improve the HMB.

Regarding the survey carried out on the students, 100 % declared that they like this discipline. Regarding, if the number of games that are carried out in the class is sufficient, 42.8% answered affirmatively and 57.2 % answered no; values that reflected the existence of disagreement between the members of the group (Figure 2).

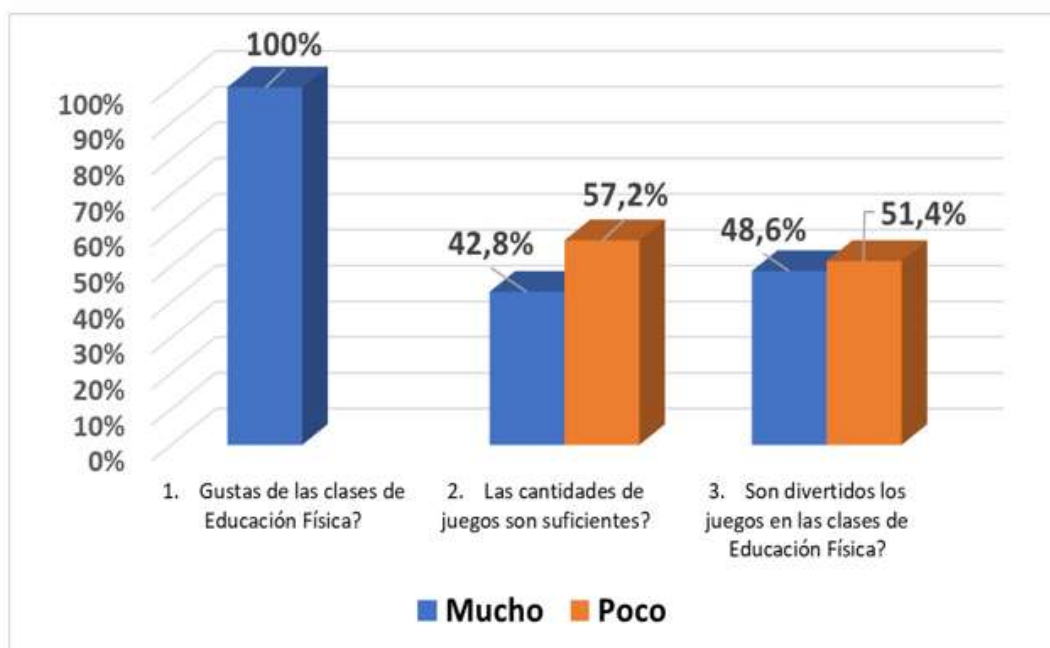


Fig. 2. - Interest in Physical Education classes

In addition, according to the opinion of 74 % of the students, the games of running, jumping and throwing were few. On the other hand, the questions referring to the linking of board games with Physical Education contents, 68.6% selected chess over the game of queen, due to the characteristics of the pieces and the possibility of movements (Figure 3).



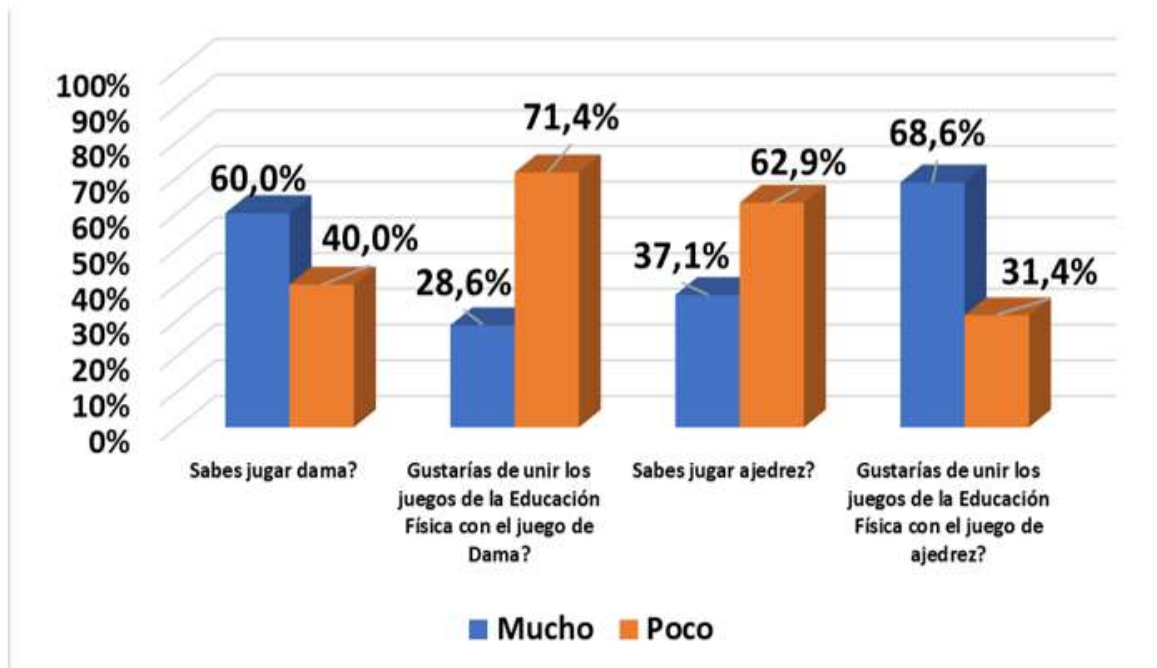


Fig. 3. - Integration of games with Physical Education classes

Based on the above considerations, the proposal of small games with notions of chess for the development of HMB of the 2nd grade of Elementary School 1728 in the Tchioco neighborhood, in Lubango, was presented. Its realization was conceived during the school year. Its structure was graphically represented in figure 4 and part of the philosophical, sociological, psychological and pedagogical foundations; It consisted of three stages where the functional logic between its parts was explained (Figure 4).



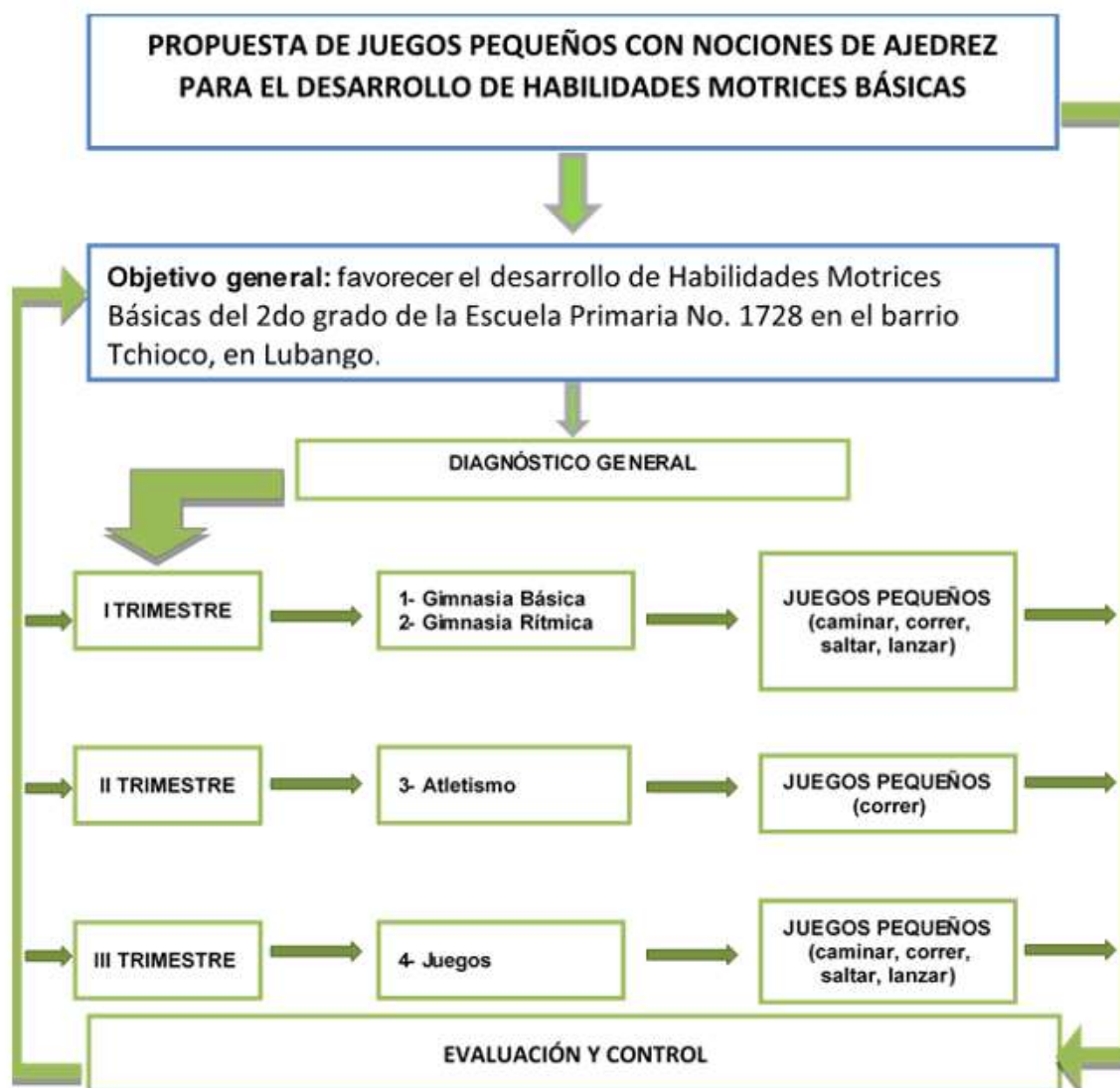


Fig. 4. - Proposal for small games with notions of chess for the development of Basic Motor Skills of the 2nd grade of Elementary School 1728 in the Tchioco neighborhood, in Lubango

It started from a first moment where a general diagnosis was made that inquired about different factors in the context of the research and the level of improvement of the HMB of the selected sample; this, by determining the characteristics of Physical Education in 2nd grade, the distribution of the particularities of each trimester to know the objectives and the contents to work on.

For the organization of these small games, the structure elaborated by Watson (2008) was assumed, also for its description that included the name of the game, objective, materials, organization, development and rules in order to facilitate a better understanding in the application and fulfillment of its objective.



At the time of the evaluation and control, the effectiveness of the small games applied to the general fulfillment of the objectives in each quarter was verified. In this way, actions were carried out in order to achieve a continuous nature in the process and the necessary corrections were made.

Due to its importance, it was deepened at the time of application of small games in each of the quarters. (All the games were made by the authors of this research)

I Quarter

Theme 1: Basic gymnastics

General objectives:

- Know the HMB.
- Provide the acquisition of a correct posture.
- Awaken imagination, creativity and the rhythm of movement.
- Motivate students for pre-sports practice, through small competitions.

Subtopics (Displacements, Jumps, throws).

Theme 2: Rhythmic gymnastics.

General Objectives:

- Develop sense of rhythm and coordination.
- Awaken imagination, creativity and the rhythm of movement.
- Perfect the notion of rhythm with singing.

Subtheme (Rhythm).

Game 1

Name: The traveling piece.

Objective: Walk in different directions according to the mentioned piece.

Materials: White and green chalk, cardboard with the movement of the pieces and baskets.

Organization: Students form three teams (lines), each facing the board that is painted on the floor. At the bottom of the board, in front of each team, there is a basket, where there is a number of chess pieces, according to the number of members of each team.

Development: The teacher shows a sheet with the movements of one of these chess pieces (bishop, rook or knight). The first student of each team begins to walk with the displacement of the piece shown. When the movement ends, he/she claps his/her hands before executing



the next one, until he/she reaches his/her team's basket. At this moment, the piece that corresponds to the displacement made is selected and the hand is raised to show the piece.

Rules:

- No child should be collided with while moving around the board.
- One point is awarded for all students who perform the movement correctly. Another point for those who select the piece well.
- The team that accumulates the most points win.

Game 2

Name: The friendly pawn.

Objective: Jump, walk and run in a straight line in different ways.

Materials: White and green chalk, cardboard and sheets.

Organization: Students form lines of six members in the squares from b2 to g2 and from b7 to g7.

Development: The teacher sings a song that indicates the movements to be made.

- Jumping, jumping two squares advancing.
- Walking, walking the pawn is capturing.
- Trotting, trotting the pawn is promoting.

Rules:

- The moves must match the skill the song suggests.

Game 3

Name: The Jumping King.

Objective: Jump with both feet in different directions.

Materials: White and green chalk, cardboard, whistle and sheets.

Organization: Students form a circle around a box that is placed in the center of the board. Several paper kings are placed on the edges of the board, that is, on rows 1 and 8, and on the a and h files.

Development: At the teacher's signal, the students move jumping with the movement of the chess piece and pick up one of the kings, they continue jumping from box to box until they place it in the box.



Rules:

- Perform the jumps with both feet.
- The students who jump from box-to-box win.
- They must not collide with each other.

Game 4

Name: The beaten pawn.

Objective: Throw the ball in a rolling way.

Materials: Colored chalk, cardboard, small balls and paper pawns.

Organization: Students line up facing each other, stand behind a line, and members of the same team hold a ball in their hands.

Development: At the teacher's signal, the team that has the ball throws it, in a rolling manner, to hit the opponent's teammate who is in front. Each time a student hits the target, they advance one square, imitating the movement of a chess pawn. Subsequently, the other performs the same activity.

Rules:

- The team that gets the most students at the goal of the field wins.

Game 5

Name: The dance of the towers.

Objective: Walk, run or jump with rhythmic movements.

Materials: White and green chalk, sheets with the figures of the pieces.

Organization: Students are divided into teams of four members. Two of the teams in row one and another two in row eight, the board is painted on the floor.

Development: The teacher with claps makes the rhythmic pattern (percussive sound) through which the students make the movement of the chess rook.

Rules:

- The team that performs the movements to the rhythm of the claps wins a point.
- The team that accumulates the most points win.



II trimester

Topic 3. Athletics

General objectives:

- Develop physical qualities.
- Apply motor skills.

Subtheme: Speed race.

Game 6

Name: The Animated Ladies.

Objective: Walk, run jump in a straight line for different directions.

Materials: Colored chalk, cardboard, baskets and sheets.

Organization: The students are formed in lines in the corners of the board (squares a1, h1, H8 and a8). In the center of the board is a basket with cardboard animals.

Development: The teacher says a phrase (jumping lady; walking lady or running lady) that indicates the basic motor skill to perform. The students move until they reach the basket, select a picture with the animal that corresponds to the movement made, and return moving backwards, with the same skill.

Rules:

- The student who has contact with the squares that correspond to the movement of the chess queen gets a point.

Game 7

Name: The Bishop carries over.

Objective: Run in a straight line.

Materials: White and green chalk, cardboard, sheets and flags.

Organization: Form into two teams with the name of a means of transport, facing the diagonals of the board of the same size. In each diagonal, a starting line is marked. In front of each team there is a flag with the image of the means of transport that represents the team.

Development: The teacher shows a sheet with the figure of the bishop and its movements on the board (diagonals). At the teacher's signal, the students run along the diagonal in a straight line, to reach the flag of their team. They walk back off the board to form the end of their team.



Rules:

- They must not leave the diagonal while moving around the board.
- One point for all students who perform the movement correctly.
- The team that accumulates the most points win.

III trimester

Theme 4: Games

General objectives:

- To know the coordinative and volitional physical capacities.
- Develop a sense of discipline, perseverance, camaraderie and a sense of unity.
- Analyze negative attitudes in students.
- Subthemes-running games.

Jumping games.

Game 8

Name: The fast horse.

Objective: Run in different directions.

Materials: Chalk and markers.

Organization: Students are formed into two teams placed behind a starting line. A route of the chess knight is traced on the board and a marker is also placed at the end.

Development: At the teacher's signal, the students move along the traced route. When they reach the marker, they turn around and return, in the same way, until they shake hands with their partner and join the end of the team.

Rules:

- The team which members complete the course first wins.

Game 9

Name: Row, Column, diagonal

Objective: Run between obstacles as fast as possible.

Materials: Obstacles or flags, chess pieces and whistle.



Organization: Students are seated in two teams, each divided into two columns facing each other, outside the board. On the terrain (board) the obstacles are placed in a dispersed way.

Development: The teacher mentions a chess piece (light-squared bishop, rook, queen or dark-squared bishop). The first student in each column begins to run avoiding the obstacles and complying with the movement of the mentioned chess piece, touches his partner in front for the exit and joins the column at the end.

Rules:

- The team that finishes first and correctly performs the movement of the mentioned piece wins the game.
- Avoid clashes between students during the game.
- It is not possible to go through the squares that contain obstacles.

Game 10

Name: The playful horse.

Objective: Jump in different directions.

Materials: White and green chalk, balls, whistle and sheets.

Organization: The students each have a ball and are scattered around the board painted on the floor.

Development: The teacher shows a sheet with the figure of a chess knight and its movements on the board (in the shape of an L). At the sound of the whistle, the students begin to jump carrying the ball in different parts of the body and move like the movement of a chess knight (three jumps).

Rules:

- Each time the whistle is blown, students must change the way they carry the ball.
- All students who perform the movements correctly win.

In addition, it is oriented to follow the following methodological indications.

- The games do not have to pursue victory as their objective, since this causes the rapid and incorrect execution of the activity, which is why it is necessary to emphasize the training objective.
- Apply the following steps for teaching the games: announcement of the name, motivation and explanation, demonstration and practice (applying the rules), development, evaluation and assessment.
- Ensure due compliance with the rules of the game.



- Intervene as little as possible after the game has started (only when necessary).
- Vary the members when forming teams, in order to foster solidarity and camaraderie.
- Change the game, as soon as it is detected signs of demotivation on the part of the students.
- Select the appropriate game, in correspondence with the content in which you are working.
- Take into account the existence of games that can be used to work with various declared contents.
- When selecting the game, take into account the possibilities of the participants.
- Control the game so that, as a referee, its execution is observed.
- Choose and apply the training appropriately, in order to guarantee a real working time.

Physical Education in primary education plays an important role in the development of the different physical qualities, as well as the different motor skills of the student. In these cases, Etchepare *et al.* (2005) say that there is scientific evidence that shows that knowledge of their own body is fundamental for students, the mental representations that we can make of it, where it is located and the relationships that occur with the environment.

In Primary Education, games constitute a means of Physical Education to achieve motor development, since they develop functional skills and improve the child's motor expressions, such as walking, running, jumping, rotating, jumping and balancing.

The present research had points of view in common with others, such as the works carried out by Ortín *et al.* (2008), Rodríguez *et al.* (2018) and Pol-Rondón *et al.* (2021), which demonstrated the marked preference of teachers in the area of physical activity to use games as a fundamental medium in the early ages.

CONCLUSIONS

The theoretical-methodological foundations studied allowed to deepen the object of study and the elaboration of the proposal of small games with notions of chess for the improvement of the HMB that were based on the laws and principles of Physical Education.

The elaborated game proposal had the structure, content and methodology necessary for its application, based on the many possibilities of movement and expression that the different chess pieces have, to contribute to the improvement of the HMB in Physical Education classes.



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The authors declare not to have any interest conflicts.

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The authors have participated in the writing of the work and analysis of the documents



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